Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A solid oxide fuel cell for electrochemically reacting a fuel gas with an oxidant gas to produce a DC output voltage, said solid oxide fuel cell comprising:

a layer of ceramic ion conducting electrolyte defining first and second opposing surfaces;

a conductive anode layer positioned at the first surface of said electrolyte layer; and

a conductive cathode layer positioned at the second surface of said electrolyte layer;

wherein said electrolyte layer is disposed between said anode layer and said cathode layer;

wherein said conductive cathode layer comprises a copper-substituted ferrite perovskite material and the copper-substituted ferrite perovskite material is in contact with said electrolyte layer.

Claim 2 (currently amended): The fuel cell in accordance with claim 1 wherein the perovskite material includes B-site atoms and copper is present in the perovskite material in an amount of at least 2 atomic percent, based on total amount of B-site atoms present in the perovskite material.

Claim 3 (currently amended): The fuel cell in accordance with claim 1 wherein the perovskite material includes B-site atoms and said copper is present in the copper-substituted ferrite material in an amount of at least about 5 atomic percent, based on total amount of B-site atoms present in the copper-substituted ferrite material.

Claim 4 (original): The fuel cell in accordance with claim 1 wherein the material is a copper-substituted lanthanum ferrite perovskite material.

Claim 5 (original): The fuel cell in accordance with claim 4 wherein the material includes an A-site dopant selected from the group consisting of Mg, Ca, Sr, Ba, Pr, Nd, Sm and combinations thereof.

Claim 6 (original): The fuel cell in accordance with claim 5 wherein the A-site dopant is strontium.

Claim 7 (previously presented): The fuel cell in accordance with claim 5 wherein the A-site dopant is present in the copper-substituted lanthanum ferrite material in an amount of from about 5 atomic percent to about 80 atomic percent, based on total amount of A-site atoms present in the copper-substituted lanthanum ferrite material, and copper is present in the copper-substituted lanthanum ferrite material in an amount of from about 5 atomic percent to about 60 atomic percent, based on total amount of B-site atoms present in the copper-substituted lanthanum ferrite material.

Claim 8 (original): The fuel cell in accordance with claim 5 wherein the copper-substituted lanthanum ferrite material further comprises at least one B-site dopant selected from the group consisting of nickel, cobalt, manganese, aluminum and chromium.

Claim 9 (original): The fuel cell in accordance with claim 1 wherein the copper-substituted ferrite cathode exhibits a polarization resistance of from about 0.03 to about 0.50 Ωcm^2 at 650°C in air.

Claim 10 (original): The fuel cell in accordance with claim 1 wherein the copper-substituted ferrite cathode exhibits a polarization resistance of about 0.06 Ωcm^2 at 650°C in air.

Claim 11 (canceled).

Claim 12 (original): The fuel cell in accordance with claim 1, further comprising an interlayer between said electrolyte layer and said cathode layer.

Claim 13 (original): The fuel cell in accordance with claim 1 wherein the copper-substituted ferrite material comprises a layer having a thickness of from about 1 to about 50 microns.

Claim 14 (original): The fuel cell in accordance with claim 1 wherein the copper-substituted ferrite material comprises a layer having a thickness of from about 1 to about 30 microns.

Claim 15 (original): The fuel cell in accordance with claim 1 wherein the copper-substituted ferrite material comprises essentially the entire cathode layer.

Claim 16 (original): The fuel cell in accordance with claim 1 wherein the copper-substituted ferrite material comprises at least about 25% of said cathode layer.

Claim 17 (original): The fuel cell in accordance with claim 1 wherein said cathode layer comprises a substantially homogenous mixture of a copper-substituted ferrite material and a finely-divided form of a second material.

Claim 18 (original): The fuel cell in accordance with claim 1 wherein said cathode layer comprises a perovskite composition having the formula:

$$La_{1-x-x'}Sr_xA'_{x'}Cu_yB'_{y'}Fe_{1-y-y'}O_3$$

wherein x is from about 0.05 to about 0.6; y is from about 0.05 to about 0.5; x' is from 0 to about 0.5; and y' is from 0 to about 0.4.

Claim 19 (original): The fuel cell in accordance with claim 1, further comprising at least one metallic interconnect.

Claim 20 (currently amended): A solid oxide fuel cell assembly for electrochemically reacting a fuel gas with a flowing oxidant gas to produce a DC output voltage, said assembly comprising a plurality of integral fuel cell units, each unit comprising a layer of ceramic ion

conducting electrolyte disposed between a conductive anode layer and a conductive cathode layer;

wherein the cathode layer of at least one of said fuel cells comprises a copper-substituted ferrite composition and the copper-substituted ferrite perovskite material is in contact with said electrolyte layer.

Claim 21 (currently amended): The fuel cell assembly in accordance with claim 20 wherein the perovskite material includes B-site atoms and copper is present in the composition in an amount of at least about 2 atomic percent, based on total amount of B-site atoms present in the ~~perovskite~~ material.

Claim 22 (currently amended): The fuel cell assembly in accordance with claim 20 wherein the perovskite material includes B-site atoms and said copper is present in the copper-substituted ferrite composition in an amount of at least about 5 atomic percent, based on total amount of B-site atoms present in the copper-substituted ferrite composition.

Claim 23 (original): The fuel cell assembly in accordance with claim 20 wherein the composition is a copper-substituted lanthanum ferrite perovskite material.

Claim 24 (original): The fuel cell assembly in accordance with claim 23 wherein the composition includes an A-site dopant selected from the group consisting of Mg, Ca, Sr, Ba, Pr, Nd, Sm and combinations thereof.

Claim 25 (original): The fuel cell assembly in accordance with claim 24 wherein the A-site dopant is strontium.

Claim 26 (original): The fuel cell assembly in accordance with claim 24 wherein the A-site dopant is present in the copper-substituted lanthanum ferrite composition in an amount of from about 5 atomic percent to about 80 atomic percent, based on total amount of A-site atoms present in the copper-substituted lanthanum ferrite composition, and copper is present in the copper-substituted lanthanum ferrite composition in an amount of from about 5 atomic percent to

about 60 atomic percent, based on total amount of B-site atoms present in the copper-substituted lanthanum ferrite composition.

Claim 27 (original): The fuel cell assembly in accordance with claim 24 wherein the copper-substituted lanthanum ferrite composition further comprises at least one B-site dopant selected from the group consisting of nickel, cobalt, manganese, aluminum, and chromium.

Claim 28 (original): The fuel cell assembly in accordance with claim 20 wherein the copper-substituted ferrite cathode exhibits a polarization resistance of from about 0.03 to about 0.50 Ωcm^2 at 650°C in air.

Claim 29 (original): The fuel cell assembly in accordance with claim 20 wherein the copper-substituted ferrite cathode exhibits a polarization resistance of about 0.06 Ωcm^2 at 650°C in air.

Claim 30 (canceled).

Claim 31 (original): The fuel cell assembly in accordance with claim 20, further comprising an interlayer between said electrolyte layer and said cathode layer.

Claim 32 (original): The fuel cell assembly in accordance with claim 20 wherein the copper-substituted ferrite composition comprises a layer having a thickness of from about 1 to about 50 microns.

Claim 33 (original): The fuel cell assembly in accordance with claim 20 wherein the copper-substituted ferrite composition comprises a layer having a thickness of from about 1 to about 30 microns.

Claim 34 (original): The fuel cell assembly in accordance with claim 20 wherein the copper-substituted ferrite composition comprises essentially the entire cathode layer.

Claim 35 (original): The fuel cell assembly in accordance with claim 20 wherein the copper-substituted ferrite composition comprises at least about 25% of said cathode layer.

Claim 36 (original): The fuel cell assembly in accordance with claim 20 wherein said cathode layer comprises a substantially homogenous mixture of a copper-substituted ferrite composition and a finely-divided form of a second material.

Claim 37 (original): The fuel cell assembly in accordance with claim 20 wherein said cathode layer comprises a perovskite composition having the formula:

$$La_{1-x-x'}Sr_xA'_{x'}Cu_yB'_{y'}Fe_{1-y-y'}O_3$$

wherein x is from about 0.05 to about 0.6; y is from about 0.05 to about 0.5; x' is from 0 to about 0.5; and y' is from 0 to about 0.4.

Claim 38 (currently amended): The fuel cell assembly in accordance with claim 20, further comprising:

a system for passing a gaseous fuel in contact with said anode layers and passing an oxidizing gas in contact with said cathode layers~~; and~~

~~a system for utilizing electrical energy produced by said fuel cells~~.

Claim 39 (original): The fuel cell assembly in accordance with claim 20, further comprising at least one metallic interconnect.

Claims 40-95 (canceled).

Claim 96 (withdrawn – currently amended): A method for producing electrical energy, comprising:

providing a solid oxide fuel cell, the solid oxide fuel cell including a layer of ceramic ion conducting electrolyte defining first and second opposing surfaces; a conductive anode layer positioned at the first surface of said electrolyte layer; and a conductive cathode layer positioned at the second surface of said electrolyte layer; wherein said electrolyte layer is disposed between said anode layer and said cathode layer; wherein said conductive cathode layer comprises a

copper-substituted ferrite perovskite material and the copper-substituted ferrite perovskite material is in contact with said electrolyte layer;

causing air or other oxidizing gas to flow in contact with the cathode layer; and

causing a fuel gas to flow in contact with the anode layer to provide electrical energy.

Claim 97 (withdrawn): The method in accordance with claim 96 wherein copper is present in the copper-substituted ferrite perovskite material in an amount of at least about 2 atomic percent.

Claim 98 (withdrawn): The method in accordance with claim 96, further comprising operating the fuel cell at a temperature of no greater than about 750°C.

Claim 99 (withdrawn): The method in accordance with claim 96 wherein the solid oxide fuel cell further comprises at least one metallic interconnect.

Claim 100 (withdrawn): The fuel cell in accordance with claim 5 wherein the A-site dopant is Mg.

Claim 101 (withdrawn): The fuel cell in accordance with claim 5 wherein the A-site dopant is Ca.

Claim 102 (canceled).

Claim 103 (withdrawn): The fuel cell in accordance with claim 5 wherein the A-site dopant is Ba.

Claim 104 (withdrawn): The fuel cell in accordance with claim 5 wherein the A-site dopant is Pr.

Claim 105 (withdrawn): The fuel cell in accordance with claim 5 wherein the A-site dopant is Nd.

Claim 106 (withdrawn): The fuel cell in accordance with claim 5 wherein the A-site dopant is Sm.

Claim 107 (withdrawn): The fuel cell in accordance with claim 8 wherein the B-site dopant is nickel.

Claim 108 (withdrawn): The fuel cell in accordance with claim 8 wherein the B-site dopant is cobalt.

Claim 109 (previously presented): The fuel cell in accordance with claim 8 wherein the B-site dopant is manganese.

Claim 110 (withdrawn): The fuel cell in accordance with claim 8 wherein the B-site dopant is aluminum.

Claim 111 (withdrawn): The fuel cell in accordance with claim 8 wherein the B-site dopant is chromium.

Claim 112 (currently amended): The fuel cell in accordance with claim ~~6~~ 1 wherein the copper-substituted lanthanum ferrite material further comprises at least one B-site dopant selected from the group consisting of nickel, cobalt, manganese, aluminum and chromium.

Claim 113 (previously presented): The fuel cell in accordance with claim 112 wherein the B-site dopant is manganese.

Claim 114 (currently amended): The fuel cell in accordance with claim ~~5~~ 20 wherein the copper-substituted lanthanum ferrite material further comprises at least one B-site dopant selected from the group consisting of nickel, cobalt, manganese, aluminum and chromium.

Claim 115 (new): A solid oxide fuel cell for electrochemically reacting a fuel gas with an oxidant gas to produce a DC output voltage, said solid oxide fuel cell comprising:

a layer of ceramic ion conducting electrolyte defining first and second opposing surfaces;

a conductive anode layer positioned at the first surface of said electrolyte layer; and

a conductive cathode layer positioned at the second surface of said electrolyte layer;

wherein said electrolyte layer is disposed between said anode layer and said cathode layer; and

wherein said conductive cathode layer comprises a copper-substituted lanthanum ferrite perovskite material that includes at least one B-site dopant selected from the group consisting of nickel, cobalt, manganese, aluminum and chromium.

Claim 116 (new): The fuel cell in accordance with claim 115 wherein copper is present in the perovskite material in an amount of at least 2 atomic percent, based on total amount of B-site atoms present in the perovskite material.

Claim 117 (new): The fuel cell in accordance with claim 115 wherein said copper is present in the copper-substituted ferrite material in an amount of at least about 5 atomic percent, based on total amount of B-site atoms present in the copper-substituted ferrite material.

Claim 118 (new): The fuel cell in accordance with claim 115 wherein the perovskite material includes an A-site dopant selected from the group consisting of Mg, Ca, Sr, Ba, Pr, Nd, Sm and combinations thereof.

Claim 119 (new): The fuel cell in accordance with claim 118 wherein the A-site dopant is strontium.

Claim 120 (new): The fuel cell in accordance with claim 115 wherein the copper-substituted ferrite cathode exhibits a polarization resistance of from about 0.03 to about 0.50 Ωcm^2 at 650°C in air.

Claim 121 (new): The fuel cell in accordance with claim 115, further comprising an interlayer between said electrolyte layer and said cathode layer.

Claim 122 (new): The fuel cell in accordance with claim 115 wherein the copper-substituted ferrite material comprises a layer having a thickness of from about 1 to about 50 microns.

Claim 123 (new): The fuel cell in accordance with claim 115 wherein the copper-substituted ferrite material comprises a layer having a thickness of from about 1 to about 30 microns.

Claim 124 (new): The fuel cell in accordance with claim 115 wherein the copper-substituted ferrite material comprises essentially the entire cathode layer.

Claim 125 (new): The fuel cell in accordance with claim 115 wherein the copper-substituted ferrite material comprises at least about 25% of said cathode layer.

Claim 126 (new): The fuel cell in accordance with claim 115 wherein said cathode layer comprises a substantially homogenous mixture of a copper-substituted ferrite material and a finely-divided form of a second material.

Claim 127 (new): The fuel cell in accordance with claim 115 wherein said cathode layer comprises a perovskite composition having the formula:

$$La_{1-x-x'}Sr_xA'_{x'}Cu_yB'_{y'}Fe_{1-y-y'}O_3$$

wherein x is from about 0.05 to about 0.6; y is from about 0.05 to about 0.5; x' is from 0 to about 0.5; and y' is from 0 to about 0.4.

Claim 128 (new): A solid oxide fuel cell assembly for electrochemically reacting a fuel gas with a flowing oxidant gas to produce a DC output voltage, said assembly comprising a plurality of integral fuel cell units, each unit comprising a layer of ceramic ion conducting electrolyte disposed between a conductive anode layer and a conductive cathode layer;

wherein the cathode layer of at least one of said fuel cells comprises a copper-substituted ferrite composition that includes at least one B-site dopant selected from the group consisting of nickel, cobalt, manganese, aluminum and chromium.

Claim 129 (new): A method for producing electrical energy, comprising:

providing a solid oxide fuel cell, the solid oxide fuel cell including a layer of ceramic ion conducting electrolyte defining first and second opposing surfaces; a conductive anode layer positioned at the first surface of said electrolyte layer; and a conductive cathode layer positioned at the second surface of said electrolyte layer; wherein said electrolyte layer is disposed between said anode layer and said cathode layer; wherein said conductive cathode layer comprises a copper-substituted ferrite perovskite material that includes at least one B-site dopant selected from the group consisting of nickel, cobalt, manganese, aluminum and chromium;

causing air or other oxidizing gas to flow in contact with the cathode layer; and

causing a fuel gas to flow in contact with the anode layer to provide electrical energy.

Claim 130 (new): The fuel cell in accordance with claim 1 wherein the electrolyte layer comprises a yttria-stabilized zirconium oxide.

Claim 131 (new): The solid oxide fuel cell assembly in accordance with claim 20 wherein the electrolyte layer comprises a yttria-stabilized zirconium oxide.

Claim 132 (new): The fuel cell in accordance with claim 115 wherein the electrolyte layer comprises a yttria-stabilized zirconium oxide.